GSAS v5.3 Release Notes Errata

GSAS Team

September 13, 2006

After delivery of GSAS v5.3, several changes to Product Format/Definition Change Summary section of the Release Notes were needed which necessitated this Errata. Corrected Release Notes follow this errata section. Minor grammatical corrections have also been made to the Release Notes. The V5.3 GSAS software and Product Database documentation have not been changed since the GSAS v5.3 release. Only the Release Notes has been updated/corrected.

GLA05

- The previous v5.3 Release Notes stated "Updated i_wfFitSDev_1, i_wfFitSDev_2, i_sDEVFitTr, and i_parmTr to reflect the product unit change to microvolts*10". The updated Release Notes now read: "**Changed microvolts*10 to microV*100 for i_parmTR"**.

GLA12-15

- For GLA13, the previous v5.3 Release Notes stated of i_RufSeaIce: "Changed algorithm units to meters." The updated Release Notes delete **"Changed algorithm units to meters".** (The description was updated as previously noted.)

- For GLA12-15, the previous v5.3 Release Notes stated "Added i_srf_slope, i_srf_ruf, i_maxRecAmp and i_sDevNsOb1". The updated Release Notes delete **"Added i_srf_slope and i_srf_ruf parameters"** from GLA12-14. (These parameters were previously present but not filled.) i_maxRecAmp and i_sDevNsOb1 are correctly identified as new additions to GLA12-15.

- For GLA12-15, the previous v5.3 Release Notes stated "Improved description of i_satRngCorr". This is confusing since another note stated that "i_satRngCorr was named to i_satElevCorr". The updated Release Notes now read: **"Improved description of i_satElevCorr.**

- For GLA15, the previous v5.3 Release Notes stated "Added the following parameters to GLA15: i_OcMeanElev, i_OcRufRMS". The updated Release Notes now read: **"Values for i_OcMeanElev, i_OcRufRMS are now filled".**

- For GLA15, the previous v5.3 Release Notes stated "Added i_srf_slope, i_srf_ruf parameters to GLA15". This line was included twice. The updated Release Notes delete one of the lines.

GSAS v5.3 Release Notes

GSAS Team

Updated September 13 2006

Introduction

Although a "point-release", GSAS v5.3 incorporates significant changes to the L1B and L2A product parameters. The elevations on the products have changed very little. However there are now improved corrections for saturation effects and improved flags to aid in data selection. Many other parameters have been 1) improved due to updated algorithms, 2) are now being computed or 3) are new additions.

The data dictionary and flag PDFs have been significantly updated. A significant effort has been made to improve descriptions of the altimetry products. If there are questions regarding GLAS parameters, please look at the updated data dictionary on http://glas.wff.nasa.gov.

L1A Changes (GLA01, 02, 03 and 04)

None

Altimetry Changes (GLA05, 06, 12, 13, 14, and 15)

1. Corrections are now applied for oscillator frequency as determined by the GLAS engineering team, All elevations are shifted about 2 cm; and the relative elevations between operations periods shift less than 3 to 8 mm. This change means products from version 5.3 and higher should not be used in combination with products from earlier releases in any research.
2. The saturation range correction has been renamed to saturation elevation correction (SatElevCorr) to reflect the proper sign of the correction. More importantly, it is provided when it is believed to be correct and is invalid when a correction is needed but algorithm can not provide a value. Also the flag (satCorrFlg) has been improved for better data usage determination. The saturation correction has not been applied to the elevations, so users should apply this correction when it is valid. When it is not valid, data should be used with care as it may be biased. For this release the percent saturation for the flag to be inconsequential is 2%. This low value was picked so studies can be made of the low saturation correction. Since these are small values this may either improve the data or add a small noise to the results.
3. A correction to the received energy computed from saturated waveforms is provided (satNrgCorr). It has not been applied to the data.
4. The algorithm for setting the saturation index (satNdx) was changed. The index is still the number of samples above a threshold but this threshold is now receiver gain dependent.

5. The fit standard deviations (wfFitSDev) may have been computed from either the raw waveform or a normalized waveform. For this release, the standard fit uses the raw waveform and the alternate fit uses the normalized waveform. The maximum amplitude has been added to most products to allow users to rescale the standard deviations to the base they want to use.

6. The fit to the transmit pulse changed slightly. This may induce a few mm change in its location at times and is reflected in the range and elevations.

7. A new parameter (pctSAT) to express the percent of waveform saturated has been added. The science team is still evaluating this parameter regarding its usefulness in data quality selection.

8. The Waveform Quality flag word has changed. A bit was added to indicate if waveforms are clipped at maximum values. Also some of the flags were found to be confusing and were removed.

9. The alternate fit algorithm has been tuned to provide fewer peaks in narrow return echoes. These should be more meaningful to true surface features. Most saturated echoes are now fit with a single peak. Also it was found that some fits were not keeping the last peak when they should have been. For this release, the last peak from the initial estimates is kept during the fit process. If its amplitude goes to zero it will be deleted from the output. (On this release, parameters are set so it should never get to zero amplitude, but still may be insufficient.)

10. The sea ice roughness algorithm has been changed. (GLA13- RufSeaIce).

11. Some GLA15 algorithms have been updated and additional parameters have been added. Several previously unfilled parameters are now filled appropriately.

12. The high resolution SRTM DEM has been updated to use the “finished” data files The averaging scheme to fill in missing data is no longer being used. Data products now have more complete coverage when not pointing at the reference ground track.

13. The Transmit energy algorithm was updated to match the GLAS engineering team calibrated values.

14. An error in the Gaussian filter smoothing was fixed. As a result, the first estimated peak information may be different. This leads to some initial estimates being different and can result in different final peak estimates on the products.

15. Products should be more consistent with corrections being invalid if the parameter is invalid. This may induce changes to editing rules for some users.

Atmosphere changes (GLA07, 08, 09, 10 and 11)

1. Boundary Layer Height (GLA08): The PBL height retrieval over oceans was modified such that the result can not exceed 3600 m. Prior versions would produce erroneously high values over ocean due to clouds. For latitudes less than -65, the boundary layer height quality flag (qf) found in i_LayHgt_Flag (byte offset 301), is set to 1 indicating lowest quality. This was done to flag the PBL height retrievals over Antarctica which are of poor quality.
2. Cloud/Aerosol Discrimination (GLA08 and 09): A problem in prior versions was the misidentification of an aerosol layer with an embedded cloud as a cloud layer. The cloud/aerosol discrimination routine was changed such that it could separate out the two layers into its aerosol and cloud components. The identification and removal of false positive cloud and aerosol layers was removing too many valid layers. This was adjusted so as to keep more good layers while eliminating the invalid layers.
3. Aerosol Extinction and Optical Depth (GLA10 and 11): A change to the optical processing routines was made so that it would not process the boundary layer if the quality flag (qf) is set to one. This means that no boundary layer optical depth or extinction retrievals are made for any of the measurements below -65 degrees latitude (where the qf is set to one everywhere). This was done to rectify a problem with high aerosol optical depth over Antarctica being caused by low cirrus clouds being mistaken for boundary layer aerosol. In other areas of the globe where the qf is one (set by the ratio of PBL avg signal to the avg signal above PBL), this should have little effect as retrievals with qf=1 as they consist of low confidence retrievals with weak PBL backscatter (and very low optical depth).

Product Format/Definition Change Summary

Product record sizes did not change in this release. All additions were made using existing spare bytes.

GLA01

- Updated i_txWfPk_Flag description and PDF.

GLA04

- Updated i_txWfPk_Flag description and PDF.

GLA05

- Added a flag to i_WFqual to indicate if the waveform is clipped
- Updated i_wfFitSDev_1, i_wfFitSDev_2, i_sDEVFitTr to reflect the product unit change to microvolts*10. Updated i_parmTr to reflect the product unit change to microV*100.

- Removed gwi_satFlagLo, gwi_satFlagHi, & gwi_satFlagHiF from i_WFqual, and used i_satNdx instead.
- Improved description of i_numiters, i_sDEVNsOb1 & i_maxRecAmp.

GLA06

- Added i_sDEVNsOb1 & i_maxRecAmp to GLA06.
- Added i_pctSAT.
- The saturation correction flag (i_satCorrFlg) has been redefined.
- Improved documentation for i_satNdx
- Changed the definition of bits 13-15 of i_RngOffQF to spare
- Improved description of i_MRC_af
- Changed the scale for d_satNrgCorr from 0.001d0 to 1.0d-17, and for d_satPwdCorr from 0.001d0 to 0.01d0
- Changed the name of i_satRngCorr to i_satElevCorr.
- Improved description of i_satElevCorr
- Product units for i_srf_slope has been changed to 0.01 deg.

GLA09

- The descriptions and PDF layouts of the following parameters have been improved: i_FRCL_Flag, i_HRCL_Flag, i_MRCL_Flag, i_LRCL_Flag.

GLA10

- The descriptions for the following parameters in GLA10 were corrected: i_cld1_sval_uf, i_aer4_sval_uf, i_cld1_bs_flag, i_cld1_ext_flag

GLA12

- Added i_pctSAT.
- The saturation correction flag (i_satCorrFlg) has been redefined.
- Added i_maxRecAmp and i_sDevNsOb1.
- Improved documentation for i_satNdx
- Improved description of i_MRC_af
- Changed the scale for d_satNrgCorr from 0.001d0 to 1.0d-17, and for d_satPwdCorr from 0.001d0 to 0.01d0
- Changed the name of i_satRngCorr to i_satElevCorr.
- Improved description of i_satElevCorr
- Product units for i_IsSlopeEmp has been changed to 0.01 deg.

GLA13

- Added i_pctSAT.

- The saturation correction flag (i_satCorrFlg) has been redefined.
- Improved description of i_RufSeaIce.
- Added i_maxRecAmp and i_sDevNsOb1.
- Improved documentation for i_satNdx
- Improved description of i_MRC_af
- Changed the scale for d_satNrgCorr from 0.001d0 to 1.0d-17, and for d_satPwdCorr from 0.001d0 to 0.01d0
- Changed the name of i_satRngCorr to i_satElevCorr.
- Improved description of i_satElevCorr

GLA14

- Added i_pctSAT.
- The saturation correction flag (i_satCorrFlg) has been redefined.
- Added i_maxRecAmp and i_sDevNsOb1.
- Improved documentation for i_satNdx
- Improved description of i_MRC_af
- Changed the scale for d_satNrgCorr from 0.001d0 to 1.0d-17, and for d_satPwdCorr from 0.001d0 to 0.01d0
- Changed the name of i_satRngCorr to i_satElevCorr.
- Improved description of i_satElevCorr
- Product units for i_LandSlopeLast has been changed to 0.01 deg.

GLA15

- Added i_pctSAT.
- The saturation correction flag (i_satCorrFlg) has been redefined.
- Values for i_OcMeanElev, i_OcRufRMS are now filled.
- Added i_srf_slope, i_srf_ruf, i_maxRecAmp and i_sDevNsOb1.
- Improved documentation for i_satNdx
- Improved description of i_MRC_af
- Changed the scale for d_satNrgCorr from 0.001d0 to 1.0d-17, and for d_satPwdCorr from 0.001d0 to 0.01d0
- Changed the name of i_satRngCorr to i_satElevCorr.
- Improved description of i_satElevCorr
- Product units for i_srf_slope has been changed to 0.01 deg.

Known Problems

Altimetry parameter descriptions are still being improved in the data dictionary. The team welcomes questions, comments, and/or suggestions regarding product parameter descriptions.

As with prior versions, daytime 532 data from laser 2a and early 2b operating periods suffer from a background problem related to the detectors. Essentially the background is a function of range and it is difficult to accurately measure and compensate for this effect. Consequently, the daytime 532 data are sometimes poorly calibrated. This problem becomes worse as the laser energy decreases in the laser 2b operating timeframe.

Clouds that are embedded within aerosol layers will be detected at the 4 second (low) resolution, but it is possible that under some conditions they will be missed at the higher resolutions. This would usually occur with cumulus clouds embedded within a 3-5 km thick aerosol layer in the lower troposphere.

We are still investigating the GLA04 IST time tag alignments.

The science team created a new estimated surface slope algorithm for flat surfaces. The new estimated slopes on flat surfaces at low slopes were found to be larger than expected. The science team is investigating the reason why the received and transmit signal widths would be causing this problem. The surface slope and roughness for this release has been changed to output as invalid values.

Release Information

The ClearCase label for this release is RELEASE_5.3.

Products generated by this software will be labeled as Release 28 by SDMS.

The release date is August 31, 2006.

Version numbers have been updated to “V5.3 Aug 2006".

This should be verified during operation by checking the version information in the appropriate ANC06 files.

SMDS Impact

The distribution tarfile is on glasdev.wff.nasa.gov at the following location:

/glasdev1/v5/dist/gsas_v5.3.tar.Z.

Bundle Changes

None

ANC File Changes

ANC07s were updated.

ANC38s were updated

ANC45s,were updated

ANC52s were updated.

STRMs were updated.

A new ANC33 will be provided to Ops.

Detailed Change Notes

0002379: Set Surface Slope and Roughness to invalid on all products (GLA06,GLA12-15)

Changed e_calcslope to return invalid slope and roughness.

0002373: Change Minimum pctSAT to 0% for setting satCorrFlg and defining satElevCorr

The min pctSAT value has been changed to 2. There were some issues with using a value of 0. The minimum pctSAT value has been modified from 10% to 2%.

0002372: Reference range is not corrected for oscillator rate

Fixed an error in the application of the oscillator correction. This fix shifts the overall reference range by about 2cm.

0002371: Update Product Documentation For GLA06, 12, 14 & 15

The product units for gla06_prod%i_srf_slope, gla12_prod%i_IsSlopeEmp, gla14_prod%i_LandSlopeLast, and gla15_prod%i_srf_slope have been changed to 0.01 deg.

0002369: PVDB has old scale factors for slope parameters

Changed scale factor from 001. to .01 for the following parameters, GLA06 d_srf_slope, GLA12 d_IsSlopeEmp, GLA14 d_LandSlopeLast, GLA15 d_srf_slope.

0002368: Inconsistencies btwn 5.3 code and PVDB

Changed the order of i_srf_ruf, i_srf_slope, i_maxRecAmp, and i_sDevNsOb1 in the product database to match the order of variables in the product code.

0002367: Change to anc07 for alternate waveform fitting

D_MAXDELTAS_A1 changed from 1.0d0 to 0.5d0

0002366: i_pctsat is not in the Product Variable Database

Added variable i_pctsat to the product database for GLA06, and GLA12-15.

0002364: Error in GLA08_print_mod.f90, GLA09_print_mod.f90, and GLA11_print_mod.f90

Fixed omissions in the GLA08/09/11 print modules.

0002363: V5.3 qapg error on GLA04

Modified the QAPG code to handle non-standard GLA04 filenames.

0002362: Laser 3B Waveform Jobs Crash

Patched a problem where the QAP code attempted to use an unallocated array at the last record in a granule.

0002360: i_deltagpstmcor range

Changed product minimum value for d_deltagpstmcor on GLA05, GLA06, and GLA12-15.

0002355: Flags no longer exist -- remove from GLA05 browse

QA version number was changed and plotting software modified so the saturation flag information is not shown on the browse products.

0002354: Transmit (TX) pulse is not being fit properly

Removed smoothing from the fitting process for the transmitted pulse. Fixed a problem where the fit of the transmitted pulse was using alternate parameters in W_FunctionalFt (The signal begin and end processing in W_Assess was already using the standard parameters).

0002348: New ANC33 the Frequency/GPS correlation file

The ANC33 file now includes oscillator corrections for each operations period.

0002346: i_satRngCorr should be changed to i_satElevCorr

Changed the name of satRngCorr to satElevCorr. This change should help clarify that the parameter is a surface elevation correction.

0002345: i_satRngCorr description change

Improved description of i_satRngCorr (also see 0002346).

0002341: Add i_maxRecAmp and i_sDEVNsOb1 to GLA06

Added i_sDEVNsOb1 & i_maxRecAmp to GLA06.

0002340: Description For gla13%d_RufSeaIce Needs To Be Changed

Improved description of RufSeaIce. Changed algorithm units to meters.

0002339: Waveform quality flag Add clipped waveform bit to WfQual on GLA05

Added a flag to GLA05%l_WFqual to indicate if the waveform is clipped and a value to anc07_0004, for the minimum number of gates that are equal to 255, needed to set the flag.

0002338: Percent Saturation for GLA06,12 to 15

Added a new parameter, percent saturation (d_pctSAT), for GLA06, 12-15. This parameter will be 1 byte per shot with a scale factor of 1, with a resolution of 1%. This parameter will be calculated using the alternate threshold full width for GLA14, and the standard full width for GLA06,12,13, and 15.

0002337: Saturation Correction Flag change(i_satCorrFlg)

The saturation correction flag (i_satCorrFlg) has been redefined. The new values are 0 for no saturation, 1 for an inconsequential saturation correction, 2 for an applicable and computable correction, 3 for an applicable but not computable correction , and 4 for not a applicable saturation correction. If there is no signal detected, the saturation correction flag is set to 0, with the saturated range correction set to invalid.

0002330: Waveforms Cannot Handle A Change In Compression Type Within A Frame

Fixed the code that calculates the standard deviation of fit to use compression correctly. This properly allows compression to switch from pqn and r types on each shot.

0002329: Ranges for i_satRngCorr, i_gval_rcv are too narrow

Corrected product min/max ranges in the database.

0002327: Upgrade SRTM Swath Catalogs to 2 km Half-Width

The SRTM track catalogs have been expanded. They now have a dimension of 2 km on both sides of the satellite ground track, with an additional 0.1 km tolerance added to both sides. This was done to compensate for previously unrecognized fluctuations in the difference between the satellite ground tracks and the reference orbit ground track. The larger than expected differences resulted in a significant percentage of available high resolution DEM elevations that were not included in the GLAS data elevation data products.

0002326: Correct Comments in anc07_0004 and update alt fit parameters

Corrected comments in anc07_0004 for I_ESTSWn. Changed I_ESTSW1 from 1 to 0. Changed I_MAXNDXNSAT1 from 257 to 20. These changes tweak the alternate fit waveform parameters.

0002325: Release 28 ESDTs needed

Updated ESDTs/ANC45s to reflect Release 28.

0002324: Saturation index change to make threshold a function of gain

This change makes the threshold used to set saturation index a variable based on the received gain setting instead of a constant voltage for all return echoes. In effect it allows a number of normal waveforms with large amplitiudes to not be flagged as saturated.

Changed I_SATNDXTH, the minimum amplitude for incrementing the saturation index,

to gi_satNdxTh, a lookup table indexed by receiver gain.

0002322: Keep Last Peak Feature Missing

Added code in the estimating proceedures to keep peak 1 (peak closest to the ground) even if its rank is greater than i_maxfit (if i_keepPk1_n is set to 1). Added switches in anc07 (i_keepPk1_1 & i_keepPk1_2) to activate/deactivate.

0002321: GLA15 Windspeed/Direction values not being set

Fixed a coding omission whereby Surface_wind and Surface_wdir were not being populated on GLA5. Surface_wind and Surface_wdir now have values.

0002320: GLA15 compute Ocean State Parameters

Added the following parameters to GLA15: i_OcMeanElev, i_OcRufRMS.

0002318: GLA15 new pass throughs

Added i_srf_slope, i_srf_ruf, i_maxRecAmp and i_sDevNsOb1 parameters to GLA15.

0002317: GLA14 new pass throughs

Added i_isRngOff, i_maxRecAmp and i_sDEVNsOb1 parameters to GLA14.

0002316: GLA13 new pass throughs

Added i_isRngOff, i_maxRecAmp and i_sDEVNsOb1 parameters to GLA13.

0002315: GLA12 new pass throughs

Added i_isRngOff, i_maxRecAmp and i_sDEVNsOb1 parameters to GLA12.

0002314: GLA09 Documentation Error

The descriptions and PDF layouts of the following parameters have been improved: i_FRCL_Flag, i_HRCL_Flag, i_MRCL_Flag, i_LRCL_Flag.

0002311: GLA05 d_wfFitSDev units

Updated i_wfFitSDev_1, i_wfFitSDev_2, i_sDEVFitTr, and i_parmTr to reflect the product unit change to microvolts*10.

0002304: The Online Documentation For i_satNdx Needs To Be Updated

Improved documentation for i_satNdx.

0002303: Remove averaging scheme for SRTM DEM height

Averaging of SRTM DEM heights in cases of missing data values has been turned off.

0002298: Frames with all invalid data found in GLA06,12

After examining the existing elevation manager, we determined that the assumption that GLA06 elevations are a superset of GLA12-15 elevations is a bad one. There can be a GLA14 valid elevation when there is no corresponding GLA06 elevation. Also, records are not currently thrown out based on the second gelocation steps (ie: editing is currently based on the PRE-geolocation). The code was revised so that the possibility of a valid GLA14 and invalid GLA06 is handled. The code was also revised to use final region-specific elevations to determine if a record should be written to the products. There should no longer be GLA12-15 records which contain entirely invalid elevations.

0002296: Problems running partial elevation job starting at 00:00:00 hrs of the day - job was hung in the process stage

Changed the GLA09/11 syncrhonization code to better handle cases where granule boundaries do not end on an even 4-second boundary.

0002295: GSAS Library Modifications to Accomodate SCF Linux Porting

Made minor changes to a variety of GSAS routines to allow for porting SCF code (which uses the GSAS libraries) to Linux.

0002293: Modification of PBL height algorithm

1) For the time being, the PBL height will not be computed for data poleward of 70N or 70S. In these regions PBL height will be reported as invalid.

2) Over oceans (when the surface type indicates ocean), the maximum PBL height allowed is 3.6 km. If the height is greater than this, then it is set to invalid.

3) Cloud/aerosol discrimination was tweaked in mantis 2292

0002292: Modification of 532 cloud and aerosol layer false positive identification

The adjustment to the cloud false positive removal scheme was accomplished. In addition, a modification to the cloud/aerosol discrimination routine was made that eliminates an aerosol layer with an embedded cloud to be classified as a cloud layer. The new code enables the separation of aerosol and cloud into two distinct layers for these cases.

A slight tweak to the aerosol/cloud discrimination routine was made that will tend to classify more layers as aerosol

0002291: Gaussian Smoothing Filter Loop May Need Redesigning

Changed gaussian smoothing loop parameters in W_Assess such that if no peaks (signal) are detected then smoothing is reduced in steps (the filter width is divided by two) to find inital peaks until the minimum filter width is reached, or until a signal is found.

0002290: Update i_txWfPk_Flag Description in Product Database

Updated i_txWfPk_Flag description and PDF.

0002284: Format problem in online product descriptions

Changed i_satRngCorr description.

0002277: RufSealce Is Not Reasonable And Should Be Corrected

Changed calculation of GLA05%d_RMSpulseWd and GLA13%d_RufSeaIce in accordance with "Seaice Roughness Computation Using the First and the Last Peaks of Fitted Gaussian Curves" by Taehun Yoon and Bea Csatho, 6/10/2006. An update was to set sigma H (Impluse response) to the value 0.0.

0002272: Saturation Corrections may need to be interpolated.

Added code to interpolate the saturated range correction from the anc52 table. Set d_satRngCorr & d_satNrgCorr to zero if the saturation index is less than gi_min_satNdx (in anc07_0003).

0002266: Need add different thresholds for signal begin/end

Added ability to have different alternate and standard fit thresholds for signal begin and signal end.

0002264: Investigate GPS Latch time problem

One of the clocks is on the edge of pushing over our limits that keeps alignment. The gaps are from a few minutes to 10 minutes. Problem not seen on recent data so its felt that the clock edge has been passed. Suggest using the same GPS latch for 15 minutes. Time tagging seems to be working.

0002263: Criteria For Setting l_WFqual(gwi_satFlagLo), l_WFqual(gwi_satFlagHi) & l_WFqual(gwi_satFlagHiF) Needs To Be Updated

Removed gwi_satFlagLo, gwi_satFlagHi, & gwi_satFlagHiF from gla05%l_WFqual, and used gla05%i_satNdx instead. Changed the definition of bits 13-15 of gla06%i_rng_UQF (aka i_RngOffQF) to spare.

0002258: i_MRC_af documentation discrepancy

Improved description of i_MRC_af in GLA06, GLA12-GLA15.

0002257: Leap second problem

Corrected a problem with GLAS_Tick/GLAS_Reader where, in specific cases, ANC09 files were not correctly synchronized with other input data at the start of processing.

0002243: Sealce Roughness paramters need update

In calc_seaice_prop, set GLA13%d_RufSeaIce to invalid.

0002242: Correct surface slope computation

Implemented new formula for surface slope using the transmit pulses major axis and eccentricity. Added GD_MAX_SLOPE to anc07_0003, anc07_elev_mod, const_elev_mod, and e_calcslope_mod. Changed scalefor slope from 0.001 to 0.01 in GLA06, GLA12, GLA14 and GLA15.

0002241: Atmosphere jobs bomb (IEEE underflow) in acctest for laser 2b

Fixed a crash problem in the atmosphere code caused by green low laser energy levels.

0002240: Transmit energy computation does not use TX Gain correctly

Corrected use of the TX Gain during computation of transmit energy. Added a step in which a gain factor correction is multiplicatively applied to the transmit energy.

0002237: Browse jobs abort when file contains no valid data

QABrowse was changed to return gracefully if there is no valid data in an input file. This will happen for any product.

0002236: Fix error in Gaussian Filter that smooths waveforms

Fixed smoothing filter for both alternate and standard fit. D_FLTRWDMIN1 & D_FLTRWDMIN2 in anc07_0004 are now the two-sigma gaussian smoothing filter widths (ns).

0002235: Waveform fit needs two smooth wf for initial estimates

Changed d_wf_sm(giMxGates,giMaxWF) to d_wf_sm(giMxGates,giMaxWF,2). The ",1" smoothed waveform will be used to make estimated gaussians for the alternate parameter fit, and the ",2" smoothed waveform will be used to make estimated gaussians for the standard fit.

0002234: Browse jobs fail catastrophically for GLA10 and 11

The browse program was failing when GLA10 and 11 QA files contained bad data. The code was modified to either work around the bad data or, if all data are bad, to return an error code rather than aborting.

0002232: Browse jobs failed for GLA01,02, and 04 for OPS period 2006/02/06. Also GLA01 file reports 7 header while filesize is too small

Fixed header code problem which caused GLA01 to have an extra blank header record.

0002230: i_satNrgCorr, i_satPwdCorr not changed in scal mods for V5.2

Changed the scale for d_satNrgCorr from 0.001d0 to 1.0d-17, and for d_satPwdCorr from 0.001d0 to 0.01d0 in the scal_mod's for GLA06, & 12-15.

0002229: GLA05 i_numIters needs more description in database

Improved description of i_numiters.

0002226: NIters=0 should be shown on the QAP05 n iters histogram plots

Browse program was changed to display, for GLA05, the n=0 point in the number of iterations histogram. Scales were changed on several GLA05 histograms to make them easier to read.

0002220: alternate fit least square delta step size limit

Added limits (for both alternate and standard parameters) for the amount that a parameter may change during one iteration in the fitting process.

0002166: Potential Crash with Missing SRTM track file

A problem has been corrected that caused GLAS_Alt elevations processing to crash when cycling through a "rollover" event where the last track in the 91 day orbital repeat cycle and then the first track in that series were encountered in that sequential order. This sequence of events is rarely encountered, and only then crash was only evident when SRTM high resolution elevations data was being attached to the GLAS product files.

0002011: Update ANC07 L1A limits and CT Rail Voltage not checked against limits

GLA03 QAP now checks the CT rail voltage and temperature controller monitor board (TCMB) against its limits. The GLA03 product variable name is i_TCMBdC8_t was added to the ANC07 L1A file : anc07_001_01_0005.dat. The limits are: [-18.0d0,-10.0d0, 55.0d0, 65.0d0].

Updated the limits in the ANC07 L1A data file for the following telemetry points:

GD_LSRAMP_C_LIM = 0d0,96d0,102d0,102.5d0
GD_TSPMIRHDR_C_LIM = -0.2d0,-0.1d0,0.61d0,0.62d0
GD_BUSAINST_28V_LIM = 24d0,25d0,35.1d0,35.5d0
GD_BUSBL1_V_LIM = -1d0,24.3d0,34.7d0,35d0
GD_BUSCL2_V_LIM = -1d0,24.3d0,34.7d0,35d0
GD_BUSDL3_V_LIM = -1d0,24.3d0,34.7d0,35d0

0001936: Create new NGA V2 SRTM 90m trackfiles

Modifications have been made to the GSAS code that generates track files of high resolution elevations data from the SRTM data. All track files have been re-generated using the new code and the "finished" SRTM data files. It is anticipated that all future runs of GSAS code will employ these new track files. Code that sets the i_DEM_hires_src flag has been modified to set this flag to 2 for all future GSAS runs, indicating that the "finished" SRTM data files have been used.

0001899: Some QA Vars Not Set In W_Assess

Simplified the QA at the end of W_Assess. Fixed problem where some QA variables were not being set. Fixed problem where all-invalid along track records were being written. Moved QA accumulation variables out of W_Assess & W_FunctionalFt to QA_WF_mod. Reconnected anc07_0004 switch I_ESTSW in W_FunctionalFt (it was

hard-wired to be 1) and set I_ESTSW1=1 in anc07_0004.

0001778: QAPG problems

QAPG GLA05 code was modified under this CCR to give the same results as Waveforms as changed in Mantis 1899.

Additional Information

The GSAS User Guide.

Changed Files:

./Makefile
./data
./src/common_libs/anc_lib
./src/common_libs/err_lib/ErrorBoot_mod.f90
./src/common_libs/err_lib/ErrorInit_mod.f90
./src/common_libs/exec_lib/StdCntl_mod.f90
./src/common_libs/file_lib/cksum.c
./src/common_libs/platform_lib/const_glob_mod.f90
./src/common_libs/platform_lib/const_l1a_mod.f90
./src/common_libs/platform_lib/lnblnk.f90
./src/common_libs/prod_lib/GLA00_mod.f90
./src/common_libs/prod_lib/GLA01_hdr_mod.f90
./src/common_libs/prod_lib/GLA06_print_mod.f90
./src/common_libs/prod_lib/GLA12_print_mod.f90
./src/common_libs/prod_lib/GLA13_print_mod.f90
./src/common_libs/prod_lib/GLA14_print_mod.f90
./src/common_libs/prod_lib/GLA15_print_mod.f90
./src/common_libs/time_lib
./src/glas_alt/Elev_Support_mod.f90
./src/glas_alt/WF_QAP_mod.f90
./src/glas_alt/WF_Support_mod.f90
./src/glas_alt/WriteElev_mod.f90
./src/glas_reader/PrintAnc_mod.f90
./src/glas_tick/GLAS_Tick.f90
./src/glas_tick/ReadTickData_mod.f90
./src/l1a_lib/L_Alt_mod.f90
./src/l1a_lib/QAP03_mod.f90
./data/anc07_001_01_0001.dat
./data/anc07_001_01_0005.dat
./data/anc45_001_01_0001.dat
./data/anc45_001_01_0002.dat
./data/anc45_001_01_0003.dat
./data/anc45_001_01_0004.dat
./data/anc45_001_01_0005.dat
./data/anc45_001_01_0006.dat
./data/anc45_001_01_0007.dat
./data/anc45_001_01_0008.dat
./data/anc45_001_01_0009.dat
./data/anc45_001_01_0010.dat
./data/anc45_001_01_0011.dat
./data/anc45_001_01_0012.dat
./data/anc45_001_01_0013.dat
./data/anc45_001_01_0014.dat
./data/anc45_001_01_0015.dat
./src/common_libs/anc_lib/ANC07_mod.f90
./src/common_libs/anc_lib/anc01_met_mod.f90
./src/common_libs/anc_lib/anc07_glob_mod.f90
./src/common_libs/anc_lib/anc07_l1a_mod.f90
./src/common_libs/anc_lib/anc12_dem_mod.f90
./src/common_libs/anc_lib/anc32_gps_mod.f90
./src/common_libs/anc_lib/anc47_pds_io.c
./src/common_libs/anc_lib/anc47_pds_io_linux.c
./src/common_libs/anc_lib/anc47_pds_util_linux.c
./src/common_libs/anc_lib/anc47_pds_util_linux.h

./src/common_libs/anc_lib/anc52_corr_mod.f90
./src/common_libs/time_lib/dateinterface_linux.c
./src/common_libs/time_lib/datemethods.c
./data/anc07_001_01_0003.dat
./data/anc07_001_01_0004.dat
./data/anc52_001_01_0001.dat
./data/anc52_001_01_0002.dat
./data/anc52_001_01_0003.dat
./idl/qa_browse/browse/qab05_histograms.pro
./idl/qa_browse/browse/qab07_plot.pro
./idl/qa_browse/browse/qab10_plot.pro
./idl/qa_browse/browse/qab_histpanel.pro
./idl/qa_browse/browse/qab_plotmap.pro
./idl/qa_browse/browse/qabatm_images.pro
./idl/qa_browse/browse/qabatm_statplot.pro
./idl/qa_browse/read/qapread.pro
./src/atmosphere/backscat/A_bscs_mod.f90
./src/atmosphere/layers/A_cld_det_mod.f90
./src/atmosphere/layers/A_cld_lays_mod.f90
./src/atmosphere/layers/A_pbl_det_mod.f90
./src/atmosphere/layers/A_pbl_lay_mod.f90
./src/atmosphere/opt_props/A_aer_opt_prop_mod.f90
./src/common_libs/anc_lib/anc07_elev_mod.f90
./src/common_libs/anc_lib/anc07_wf_mod.f90
./src/common_libs/exec_lib/C_CalcNrg_mod.f90
./src/common_libs/math_lib/w_add2hst_mod.f90
./src/common_libs/platform_lib/const_atm_mod.f90
./src/common_libs/platform_lib/const_elev_mod.f90
./src/common_libs/platform_lib/const_wf_mod.f90
./src/common_libs/prod_lib/GLA05_Pass_mod.f90
./src/common_libs/prod_lib/GLA06_Pass_mod.f90
./src/common_libs/prod_lib/GLA06_alg_mod.f90
./src/common_libs/prod_lib/GLA06_prod_mod.f90
./src/common_libs/prod_lib/GLA06_scal_mod.f90
./src/common_libs/prod_lib/GLA07_scal_mod.f90
./src/common_libs/prod_lib/GLA12_alg_mod.f90
./src/common_libs/prod_lib/GLA12_prod_mod.f90
./src/common_libs/prod_lib/GLA12_scal_mod.f90
./src/common_libs/prod_lib/GLA13_alg_mod.f90
./src/common_libs/prod_lib/GLA13_prod_mod.f90
./src/common_libs/prod_lib/GLA13_scal_mod.f90
./src/common_libs/prod_lib/GLA14_alg_mod.f90
./src/common_libs/prod_lib/GLA14_prod_mod.f90
./src/common_libs/prod_lib/GLA14_scal_mod.f90
./src/common_libs/prod_lib/GLA15_alg_mod.f90
./src/common_libs/prod_lib/GLA15_prod_mod.f90
./src/common_libs/prod_lib/GLA15_scal_mod.f90
./src/create_dem/maker_SRTM_trks/maker.f90
./src/elevations/c_Beam_Sun_Ang_mod.f90
./src/elevations/c_Retreive_HiRes_DEM_mod.f90
./src/elevations/c_bilin_interp_mod.f90
./src/elevations/c_calcsploc_mod.f90
./src/elevations/c_getgeoid_mod.f90
./src/elevations/c_intrppod_mod.f90
./src/elevations/c_matmul_mod.f90
./src/elevations/e_calcslope_mod.f90
./src/elevations/qap06_mod.f90
./src/elevations/qap12_mod.f90
./src/elevations/qap13_mod.f90
./src/elevations/qap14_mod.f90
./src/elevations/qap15_mod.f90
./src/glas_alt/ElevMgr_mod.f90
./src/glas_alt/WFMgr_mod.f90
./src/glas_atm/AtmMgr_mod.f90
./src/qapg/qapg_gla05_at.f90
./src/qapg/qapg_gla05_mod.f90
./src/qapg/qapg_gla05_sum.f90
./src/track_reader/track_reader_mod.f90
./src/wf_lib/QA_wf_mod.f90
./src/wf_lib/W_Assess_mod.f90

./src/wf_lib/W_CreQAStats_mod.f90
./src/wf_lib/W_FunctionalFt_mod.f90
./src/wf_lib/W_LsqFit_mod.f90
./src/wf_lib/W_Types_mod.f90